

(No Model.)

G. B. HUTCHINGS.
AUTOMATIC BOILER FEEDER.

No. 469,250.

Patented Feb. 23, 1892.

Fig. 1.

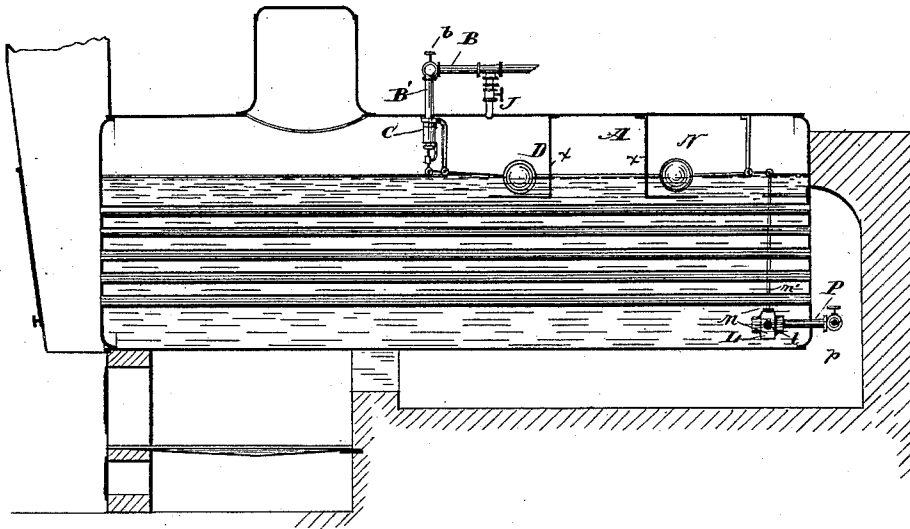


Fig. 2.

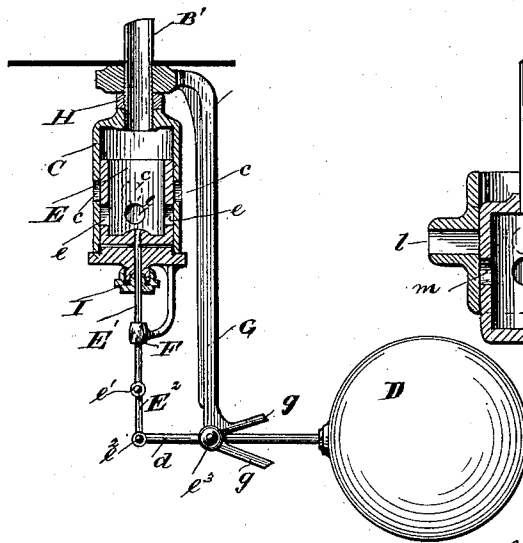
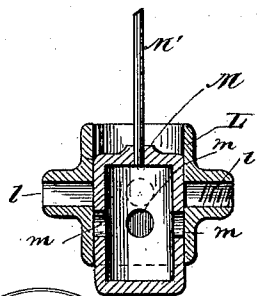


Fig. 3.



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GEORGE B. HUTCHINGS, OF CLEVELAND, OHIO.

AUTOMATIC BOILER-FEEDER.

SPECIFICATION forming part of Letters Patent No. 469,250, dated February 23, 1892.

Application filed April 18, 1891. Serial No. 389,417. (No model.)

To all whom it may concern:

Be it known that I, GEORGE BENJAMIN HUTCHINGS, a citizen of the United States, and a resident of Cleveland, county of Cuyahoga, State of Ohio, have invented certain new and useful Improvements in an Automatic Feed for Steam-Boilers, of which I hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in automatic mechanism for regulating the feed-supply of water to a boiler or a battery of boilers and maintaining a constant supply from a steam-pump.

The objects are to supply mechanism whereby a supply of steam may be led to the pump from each boiler as the water-level lowers and a supply of water furnished the boiler from the pump.

My invention consists in the float-operative valves interior to the boiler and the details of construction and combination and arrangement of parts hereinafter described, shown in the accompanying drawings, and more specifically pointed out in the claim.

In the accompanying drawings, Figure 1 is a vertical longitudinal section of a boiler supplied with my device. Fig. 2 is a view in vertical section of the steam-inlet valve and float. Fig. 3 is a vertical sectional view of the water-inlet and actuating float.

In the drawings, A represents the interior of the boiler, B the live-steam pipe leading to the pump, and C a short cylinder secured by a thread to the extremity of the steam-pipe B' and provided with the head C'.

D is the hollow metallic float, provided with the stem *d*.

E is a cylindrical valve working within the cylinder C and reciprocated by the valve-stem E', which works in the guide F, depending from the head C' and the link E², the pivot and fulcrum for the lever *d* being found at *e*³ on the bracket G, which also may be attached to the steam-pipe B', a nut H being employed to clamp all the parts together. Ports *c c* in the cylinder C and *e e* in the valve E admit steam into the steam-pipe B' when they coincide and instantly cut it off when they have passed.

In operation it will readily be seen that when the water-level in the boiler is high the ball will rise and pull down the valve till the steam is cut off from the pipe B', when of course the pump will stop; but upon the fall of the water-level to low water and the corresponding lowering of the float the valve will rise until the port-openings coincide and the steam will pass readily through them to operate the pump. An auxiliary pipe J is shown, which may be used in case any accident should happen to the device.

It is apparent that this device would be quite sufficient to insure a supply of water to a single boiler, the valves operating automatically to admit water and steam to the pipes or shut them off, as the water-level should require; but it will be seen that when used in connection with a battery of boilers, although any one device would admit steam to the pump in case the boiler in which it was contained should become low, still there would be no way of telling what boiler needed more water or what water-valve to open. For this reason a special contrivance is necessary to open the water-inlet valve from the pump simultaneously with the opening of the steam-inlet valve in the same boiler. For this reason I employ a special valve for this purpose to be used in combination with the steam-valve and accessory thereto and similarly actuated by a separate float or by a rod directly connected with the float of the steam-valve. The valve mechanism is shown distinctly in Fig. 3, where L is an open cylinder provided with four or more perforations *ll*, registering with similar openings *m m* in the closed cylindrical valve M. One of these openings connects directly with the water-pipe P from the pump. The others in the outer cylinder open on all sides, so as to equalize the pressure upon the valve.

In operation it will be seen that when the float N or other float to which the stem M' may be attached rises it cuts off the openings and the water-supply, but when it falls it brings them together and permits an inflow from the pump. For the reasons before mentioned it is desirable to have the water-valve coincident with the steam-valve in its movements and operated by the same cause. When there is danger of erratic movement in the

float from the ebullition of steam on the surface of the water, a shield, as X, may be employed to protect it from any such influence, the shield being fastened to the tubes or
5 boiler-sheet.

I do not claim as my invention the exact shape or manner of arrangement of the details of the various parts or their specific manner of connection; but

10 What I claim as new, and desire to secure by Letters Patent, is—

The improved mechanism for automatically regulating the feeding of water into a steam-boiler, consisting of a steam-outlet pipe in the
15 top of the boiler, a water-inlet pipe in the bottom of the same, a sliding valve in the end of the steam-outlet pipe, a guide depending from

the end of the said pipe, a rod E', depending from the said valve and passing through the said guide, a bracket secured to the end of the said pipe, a lever pivoted to the lower end of the said bracket and carrying a float on one end, a link connecting said lever with the rod E', a sliding valve in the end of the water-inlet pipe, a rod M', rising from the said
25 valve, and a lever pivotally supported at the top of the boiler and having one end provided with a float and its other end pivoted to the rod M', as specified.

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Witnesses:

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